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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
PANNALA, SATHYANARAYA R	
ART UNIT	**PAPER NUMBER**
2164	

DATE MAILED: 11/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/721,806	HARVEY, RICHARD HANS	
	Examiner	Art Unit	
	Sathyanarayan Pannala	2164	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 August 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,9,10,14-18,22,23 and 27-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,9,10,14-18,22,23 and 27-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Applicant's Amendment filed on 8/17/2005 has been entered with amended claims 1, 9-10, 14, and 22-23 and added claims 27-31.

Election/Restrictions

2. Applicant's election of claims 1-5, 9-10, 14-18, and 22-23 in the reply filed on 8/17/2005 is acknowledged. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144). See MPEP § 821.01.

Drawings

3. The Drawings filed on 8/17/2005 are acknowledged and they are for Fig. 1. Examiner approved them.

Claim Objections

4. Claim 29 objected to because of the following informalities: Claim limitation stated as "identifying one or more duplicate results". It is not clear from the limitation, since the duplicate rows are possible based on the query. But, if duplicate results are

obtained from more than one sub-query, the optimizer is messing the nested query. Examiner needed more clarification with reference to the specification. Appropriate correction is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> "A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made."

6. Claims 1-5, 9-10, 14-18, 22-23 and 27-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Corn et al. (US Patent 6,356,892) Corn, in view of Lohman et al. (US Patent 6,112,198) Lohman, and in view of Krishna et al. (US Patent 5,412,804).

7. As per independent claim 1, Corn teaches a method for searching a relational database using hierarchical, filter-based queries such as LDAP (col. 2, lines 31-33). Claim 1 is interpreted on the basis of the Fig. 2. Corn teaches the claimed "evaluating each term as a separate SQL instruction" as for each filter element, the method continues to generate SQL subquery according to a set of translation rules (Fig. 5, col. 5, lines 40-44). Corn teaches client machine sending a request (Fig. 1, col. 4,

lines 5-7), which is an analogous to receiving a service query. However, Lohman teaches the claimed "receiving a service query" as a given query (col. 2, lines 47). Finally, Lohman teaches the claimed "executing each separate SQL instruction" as the given query is broken up into subtasks and all the subtasks are executed in parallel by the processors (col. 2, lines 47-48).

Corn teaches splitting the received query and does not explicitly teach executing subqueries separately (Fig. 5, col. 5, lines 40-42) whereas Lohman teaches as a given query is broken up into subqueries and executing separately in parallel using several processors (col. 2, lines 47-48). Thus, it would have been obvious to one ordinarily skilled in the art of data processing at the time of the invention, to combine teaching of the cited references because Lohman's teachings would have allowed Corn's method for optimization by executing subqueries on data partitions (col. 1, lines 26-27).

Corn and Lohman do not explicitly teach expanding nested terms into un-nested terms. However, Krishna teaches "obtaining a sum of terms by expanding at least one nested term into one or more un-nested terms" as the alternate method of un-nesting a nested query having a count aggregate (Fig. 12, col. 14, lines 60-61). Thus, it would have been obvious to one ordinarily skilled in the art of data processing at the time of the invention, to combine teaching of the cited references because Krishna's teachings would have allowed Corn's method to find a better order of execution by the optimizer for evaluating the un-nested query blocks (col. 2, lines 49-51).

8. As per dependent claim 2, Corn teaches the claimed "expanding each term to remove NOT operators" as if a pair of LDAP filer elements are subject to an LDAP logical operator, the corresponding EID sets are merged using an SQL NOT IN logical operator (Fig. 5, col. 7, lines 50-52).

9. As per dependent claim 3, Corn teaches the claimed "a sum of terms are expanded using Boolean logic" as complex search filters are generated by combining basic filters with Boolean operators (col. 7, lines 3-4).

10. As per dependent claim 4, Corn teaches the claimed "the service query is an X.500 or LDAP service query" as the invention provides hierarchical LDAP searching in an LDAP directory service having a relational database management as a backing store (Fig. 5, col. 5, lines 33-37).

11. As per independent claim 9, Corn teaches a method for searching a relational database using hierarchical, filter-based queries such as LDAP (col. 2, lines 31-33). Corn teaches the claimed "a database using a plurality of tables, each table having a plurality of rows and columns, and storing arbitrary data" as the invention provides hierarchical LDAP searches using relational tables in the LDAP directory service having a relational database management system as backing store (col. 2, lines 60-63). Corn teaches the claimed "processing a service query by obtaining a sum of terms by expanding at least one nested term into one or more un-nested terms" as the method begins at step 60 by parsing an LDAP filter-based query for elements and logical

operators for the filter query (Fig. 5, col. 5, lines 37-40). Further, Corn teaches the claimed "evaluating each term as a separate SQL instruction" as for each filter element, the method continues to generate SQL subquery according to a set of translation rules (Fig. 5, col. 5, lines 40-44).

Corn does not explicitly teach executing subqueries separately. However, Lohman teaches the claimed "executing each separate SQL instruction" as the given query is broken up into subtasks and all the subtasks are executed in parallel by the processors (col. 2, lines 47-48). Corn teaches splitting the received query and does not explicitly teach executing subqueries separately, whereas Lohman teaches as a given query is broken up into subqueries and executing separately in parallel using several processors. Thus, it would have been obvious to one ordinarily skilled in the art of data processing at the time of the invention, to combine teaching of the cited references because Lohman's teachings would have allowed Corn's method for optimization by executing subqueries on data partitions (col. 1, lines 26-27).

Corn and Lohman do not explicitly teach expanding nested terms into un-nested terms. However, Krishna teaches "obtaining a sum of terms by expanding at least one nested term into one or more un-nested terms" as the alternate method of un-nesting a nested query having a count aggregate (Fig. 12, col. 14, lines 60-61). Thus, it would have been obvious to one ordinarily skilled in the art of data processing at the time of the invention, to combine teaching of the cited references because Krishna's teachings would have allowed Corn's method to find a better order of execution by the optimizer for evaluating the un-nested query blocks (col. 2, lines 49-51).

12. As per dependent claim 10, Corn teaches the claimed "the directory service arrangement including means to perform X.500 or LDAP services" as the invention provides hierarchical LDAP searching in an LDAP directory service having a relational database management as a backing store (Fig. 5, col. 5, lines 33-37).

13. As per independent claim 14, Corn teaches a method for searching a relational database using hierarchical, filter-based queries such as LDAP (col. 2, lines 31-33). Claim 1 is interpreted on the basis of the Fig. 2. Corn teaches the claimed "applying principles of logic to the directory service query to obtain a sum of terms" as the method begins at step 60 by parsing an LDAP filter-based query for elements and logical operators for the filter query (Fig. 5, col. 5, lines 37-40). Further, Corn teaches the claimed "mapping the sum of terms to SQL" as to provide a method for mapping LDAP search queries into an SQL query (col. 2, lines 51-54). Further, Corn teaches the claimed "evaluating each mapped term as a separate SQL instruction" as for each filter element, the method continues to generate SQL subquery according to a set of translation rules (Fig. 5, col. 5, lines 40-44). Corn teaches client machine sending a request (Fig. 1, col. 4, lines 5-7), which is an analogous to receiving a service query. However, Lohman teaches the claimed "receiving a directory service query" as a given query (col. 2, lines 47). Corn explicitly does not explicitly teach executing subqueries separately. However, Lohman teaches the claimed "executing each separate SQL instruction" as the given query is broken up into subtasks and all the subtasks are

executed in parallel by the processors (col. 2, lines 47-48). Corn teaches slitting the received query and does not explicitly teach executing subqueries separately, whereas Lohman teaches as a given query is broken up into subqueries and executing separately in parallel using several processors. Thus, it would have been obvious to one ordinarily skilled in the art of data processing at the time of the invention, to combine teaching of the cited references because Lohman's teachings would have allowed Corn's method for optimization by executing subqueries on data partitions (col. 1, lines 26-27).

Corn and Lohman do not explicitly teach expanding nested terms into un-nested terms. However, Krishna teaches "obtaining a sum of terms by expanding at least one nested term into one or more un-nested terms" as the alternate method of un-nesting a nested query having a count aggregate (Fig. 12, col. 14, lines 60-61). Thus, it would have been obvious to one ordinarily skilled in the art of data processing at the time of the invention, to combine teaching of the cited references because Krishna's teachings would have allowed Corn's method to find a better order of execution by the optimizer for evaluating the un-nested query blocks (col. 2, lines 49-51).

14. As per dependent claim 15, Corn teaches the claimed "expanding each term to remove NOT operators" as if a pair of LDAP filer elements are subject to an LDAP logical operator, the corresponding EID sets are merged using an SQL NOT IN logical operator (Fig. 5, col. 7, lines 50-52).

15. As per dependent claim 16, Corn teaches the claimed "the sum of terms are expanded using Boolean logic" as complex search filters are generated by combining basic filters with Boolean operators (col. 7, lines 3-4).

16. As per dependent claim 17, Corn teaches the claimed "the service query is an X.500 or LDAP service query" as the invention provides hierarchical LDAP searching in an LDAP directory service having a relational database management as a backing store (Fig. 5, col. 5, lines 33-37).

17. As per dependent claim 18, Corn teaches the claimed "the service query is a search service query" as LDAP provides the capability for directory information to be efficiently queried and it offers a rich set of searching capabilities with which users can put together complex queries to get desired information form a backing store (col. 1, line 65 to col. 2, line 2).

18. As per independent claim 22, Corn teaches a method for searching a relational database using hierarchical, filter-based queries such as LDAP (col. 2, lines 31-33). Corn teaches the claimed "a database using a plurality of tables, each table having a plurality of rows and columns, and storing arbitrary data" as the invention provides hierarchical LDAP searches using relational tables in the LDAP directory service having a relational database management system as backing store (col. 2, lines 60-63). Corn teaches the claimed "processing a service query by obtaining a sum of terms by

expanding at least one nested term into one or more un-nested terms" as the method begins at step 60 by parsing an LDAP filter-based query for elements and logical operators for the filter query (Fig. 5, col. 5, lines 37-40). Further, Corn teaches the claimed "mapping the sum of terms to SQL" as to provide a method for mapping LDAP search queries into an SQL query (col. 2, lines 51-54). Further, Corn teaches the claimed "evaluating each mapped term as a separate SQL instruction" as for each filter element, the method continues to generate SQL subquery according to a set of translation rules (Fig. 5, col. 5, lines 40-44).

Corn explicitly does not explicitly teach executing subqueries separately. However, Lohman teaches the claimed "executing each separate SQL instruction" as the given query is broken up into subtasks and all the subtasks are executed in parallel by the processors (col. 2, lines 47-48). Corn teaches slitting the received query and does not explicitly teach executing subqueries separately, whereas Lohman teaches as a given query is broken up into subqueries and executing separately in parallel using several processors. Thus, it would have been obvious to one ordinarily skilled in the art of data processing at the time of the invention, to combine teaching of the cited references because Lohman's teachings would have allowed Corn's method for optimization by executing subqueries on data partitions (col. 1, lines 26-27).

Corn and Lohman do not explicitly teach expanding nested terms into un-nested terms. However, Krishna teaches "obtaining a sum of terms by expanding at least one nested term into one or more un-nested terms" as the alternate method of un-nesting a nested query having a count aggregate (Fig. 12, col. 14, lines 60-61). Thus, it would

have been obvious to one ordinarily skilled in the art of data processing at the time of the invention, to combine teaching of the cited references because Krishna's teachings would have allowed Corn's method to find a better order of execution by the optimizer for evaluating the un-nested query blocks (col. 2, lines 49-51).

19. As per dependent claim 23, Corn teaches the claimed "The directory service arrangement comprising means to perform X.500 or LDAP services" as the invention provides hierarchical LDAP searching in an LDAP directory service having a relational database management as a backing store (Fig. 5, col. 5, lines 33-37).

20. As per dependent claims 27-31, Krishna teaches the claimed "obtaining a plurality of results wherein each separate SQL instruction is associated with one or more results and combining the one or more results associated with each separate SQL instruction" as when query blocks are pipelined, the result of a first query block is specified as input to the predicate of a second query block, but that result is presumed to be evaluated only once before evaluation of the second query block (col. 2, lines 39-43). NOT is a standard SQL query operator the NOT and every SQL teaches it (col. 5, lines 58-59).

Response to Arguments

21. Applicant's arguments filed on 8/17/2005 have been fully considered but they are moot in view of the new ground of rejection. Corn and Lohman references are

combined with the newly found Krishna reference teaches each and every limitation as discussed above.

Conclusion

22. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sathyanarayan Pannala whose telephone number is (571) 272-4115. The examiner can normally be reached on 8:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Rones can be reached on (571) 272-4085. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sathyanarayan Pannala
Examiner
Art Unit 2164

srp
October 28, 2005

MOHAMMAD ALI
PRIMARY EXAMINER